

FUDS 16.462 (100794-11302)
09/387,949REMARKS

This amendment is in response to the Examiner's Office Action dated 6/24/2004 and further in view of the in-person interview of 10/21/2004. Applicants are appreciative for the recognized allowable subject matter. Applicant is also appreciative of the professional and courteous interview held with the examiner. This amendment should obviate outstanding issues and make the remaining claims allowable. Reconsideration of this application is respectfully requested in view of the foregoing amendment and the remarks that follow.

STATUS OF CLAIMS

Claims 1-7 are pending.

Claims 5-7 are allowed.

Claims 1 and 2 stand rejected under 35 U.S.C. § 112, second paragraph, as lacking antecedent basis.

Claims 1-3 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Azuma (USP 6,430,150).

Claim 4 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Azuma, as applied to claim 1 above, and further in view of Renaudin (USP 4,388,715).

OVERVIEW OF CLAIMED INVENTION

The presently claimed invention provides for a cross-connect method and a cross-connect apparatus, both of which apply a cross-connect operation in place of a function of the hard switch (that has conventionally been used for a purpose other than a cross-

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connect operation) by selection of line setting information used for path switching or service selection and by changing a cross-connect operation through the use of the line setting information signal. Hence, the cross-connecting operation of the present invention is shared by the cross connecting operation for the main signal (including a working channel signal transmitted over a working path and a protection channel signal transmitted over a protection path) and the switching operation between the working path and the protection path. Therefore, the present invention needs no hardware switches, such as a path switch, exclusive for conducting the switching operation between the working path and the protection path, in addition to a cross-connect section.

The present invention's cross-connect method performs a cross-connect operation on a main signal, wherein the method comprises the steps of: (a) retaining line setting information required for the cross-connect operation; (b) detecting trigger information, causing a selection of either the working path or the protection path, for an individual channel signal from said main signal; (c) detecting cross-connecting trigger information pieces for the individual channel signal according to the retained line setting information; and (d) controlling the cross-connect operation of the main signal based on said line setting information and the cross-connected trigger information pieces so that either the working channel signal or the protection channel signal is selectively output under the cross-connect operation for the main signal, whereby the cross connect operation is shared for cross-connecting based on retained line setting information and selective outputting of either the working channel signal or the protection channel signal.

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The present invention's cross-connect apparatus comprises: (a) a main signal cross-connect section for performing a cross-connect operation on a main signal; (b) a memory section for retaining line setting information required for the cross-connect operation; (c) a trigger information detecting section for detecting trigger information, causing a selection of either the working path or the protection path, for an individual channel signal from said main signal; (d) a trigger information cross-connect section for cross-connecting trigger information pieces detected by said trigger information detecting section for the individual channel signal according to the line setting information; and (e) a cross-connect control section for controlling the cross-connect operation of the main signal cross-connect section, based on said line setting information of the memory section and the trigger information cross-connected by the trigger information cross-connect section so that either the working channel signal or the protection channel signal is selectively output under the cross-connect operation of the main signal cross-connect section, wherein the cross connect operation is shared for cross-connecting and the selective outputting operation.

In the Claims

REJECTIONS UNDER 35 USC 112

Minor informalities with respect to claims 1 and 2 have been corrected via the current amendment to overcome the 35 USC §112 rejection. The examiner is hereby requested to reconsider the rejected claims in light of the new amendments.

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The examiner has rejected independent claims 1-3 under 35 USC §102(e) as being anticipated by Azuma et al. (6,430,150). To be properly rejected under §102, the cited reference must provide each and every claim element of a system/apparatus claim, or each and every step of a method claim. Applicants contend that the Azuma reference, explicitly or implicitly, fails to provide for many of the claim limitations as required by claims 1-3.

Azuma et al. provides for a restoration method in a telecommunication network in which each node is provided with physical topology information relating to a physical construction of telecommunication paths included in the telecommunication network and logical topology information relating to routing of telecommunication paths. Azuma's restoration method comprises of: (a) transmitting information relating to a failure that has occurred in the telecommunication network, throughout the network, (b) in each node that has received the information relating to the failure, determining, alternative paths for bypassing the failure using the information relating to failure, the topology information, and the logical topology information; and (c) switching services to the alternative paths determined in step (b).

The present invention on the other hand provides for a cross-connect method wherein the cross connect operation is shared for cross-connecting based on retained line setting information and selective outputting of either said working channel signal or said protection channel signal. The presently claimed invention's cross-connect method and a

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cross-connect apparatus, both of which apply a cross-connect operation in place of a function of the hard switch that has conventionally been used for a purpose other than a cross-connect operation, by selection of line setting information used for path switching or service selection and by changing a cross-connect operation through the use of the line setting information signal, thereby preventing redundant configuration of the cross-connect apparatus.

Figure 1 of the application as filed discloses one embodiment of applicants' claimed invention. In figure 1, a cross-connect apparatus 1 comprises a cross-connect section 2 for performing a cross-connect operation on a main signal (including a working channel signal transmitted over a working path and a protection channel signal transmitted over a protection path), a memory section 3 for retaining line setting information required for performing the cross-connect operation, and a cross connect control section 4 for controlling the cross-connect operation performed in cross-connect section 2. The cross-connect control section 4 is configured so as to control the cross-connect operation performed in the cross-connect section 2 and to selectively output either the working channel signal or the protection channel signal. Hence, the cross-connecting operation of the present invention is shared by the cross connecting operation for the main signal and the switching operation between the working path and the protection path. Therefore, the present invention needs no hardware switches such as a path switch exclusive for conducting the switching operation between the working path and the protection path, in addition to a cross-connect section. The setup of present

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invention also diminishes power consumption by not having the redundant configuration as outlined in the prior art.

Azuma et al. is silent with respect to many of the limitations of claims 1 and 2 of the present invention. For example, Azuma et al., explicitly or implicitly, fails to provide for a cross-connection operation that is shared for cross-connecting based on retained line setting information and selective outputting of either said working channel or said protection channel signal. The examiner cites figure 6 (elements 30 and 32) and column 8, lines 19-23 as providing support for such a limitation. A closer reading of figure 6 of Azuma, however, merely depicts a restoration scheme for path restoration in the event of a failure.

Specifically, element 30 of Azuma is an alternate path storing part and element 32 is an alternate virtual path setting path. There is no teaching or suggestion in Azuma for using or modifying elements 30 and 32 (storing alternate path and alternate virtual path respectively) to share cross-connecting and selective outputting operations as required by claims 1-3, wherein such sharing eliminates additional hardware switches, such as a path switch, thereby reducing power consumption. On the contrary, Azuma uses a plurality of disparate hardware parts 28, 30, and 32 in conjunction with a separate alternate route cross-connecting part and switch, SW, to enable cross-connecting and selecting alternate paths. Applicants, contend that there is no teaching or suggestion in Azuma et al. for sharing the cross-connect operation and the selective outputting operation, as Azuma requires a separate unit for cross-connecting and a plurality of units for path selection.

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Hence, applicants contend, based on the amendments, the interview of 10/21/04, and the above-mentioned arguments, that many of the limitations of claim 1-3 cannot be anticipated by the Azuma reference. Applicants respectfully request the examiner to withdraw the rejection with respect to claims 1-3.

REJECTIONS UNDER 35 USC §103(a)

Additionally, applicants' contend that the arguments presented for independent claims 1-3 substantially apply for dependent claim 4 as it at least inherits the limitations of the claim on which it depends (i.e., claim 2 and 3). Hence, applicants respectfully request the examiner to withdraw the rejection with respect to claim 4.

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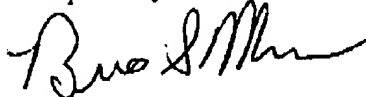
SUMMARY

As has been detailed above, none of the references, cited or applied, provide for the specific claimed details of applicants' presently claimed invention, nor renders them obvious. It is believed that this case is in condition for allowance and reconsideration thereof and early issuance is respectfully requested.

A petition for extension of time has been filed with this amendment.

If it is felt that an interview would expedite prosecution of this application, please do not hesitate to contact applicants' representative at the below number.

Respectfully submitted,



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